City of Springfield
Public Works
Engineering Division

Memo

To: **All Holders of the City of Springfield's "Design Standards for Public Improvements"; "General Conditions and Technical Specifications for Public Improvements"; "Standards Drawing Details for Public Improvements"**

From: **Michael L. Giles**

Date: **June 16, 2005**

Re: **Revised Standards and Specifications for Sidewalk Driveway Construction**

1. These revisions incorporate the latest ADA requirements for Detectable Warning Surfaces, i.e. truncated domes. Also, 4 inches of rolled stone base is now required.
2. The revisions also incorporated the APWA Standards and have been reformatted.
3. These revisions will replace Chapter 10 of both the design requirements and the specifications manuals. Also, standard drawings ST-8, ST-9, ST-10, ST-11, and ST-12 are replaced and standard drawings ST-13, ST-14, ST-15, ST-16, and ST-17 are eliminated.
4. These revisions will become effective with any new plan submitted after July 01, 2005.

Respectfully,

Michael L. Giles

Michael L. Giles, P.E.
Principal Civil Engineer

MG/BG

Enclosure

Cc: Posted on Internet as "Revision #2 dated July 01, 2005
Marc Thomsberry, Director of Public Works
Harry Price, Assistant Director of Public Works
Dan Smith, Greene County Highway Department

CHAPTER X. SIDEWALKS AND DRIVEWAYS

10. This section includes the construction or reconstruction of sidewalks, sidewalk ramps, and driveways.

10.A. Scope of Work. Sidewalks, sidewalk ramps, and driveways shall be constructed or reconstructed to the configuration, and to the lines and grades shown by the plans and generally after the curbing is constructed. Sidewalk ramp construction shall comply fully with all requirements in Section 4.7 for sidewalks in the current ADA accessibility guidelines published by the Architectural and Transportation Barriers Compliance Board (Access Board) *Americans with disabilities Act Accessibility Guidelines* (ADAAG), Washington, D.C., July 1998 or most current edition.

10.B. Materials.

10.B.1 Concrete Mix. Sidewalks and driveways are to be constructed using Portland cement concrete with a minimum 28-day compressive strength of 3,000-psi, with 6 +/- 1 percent of total air-content.

10.B.2 Expansion Joints. Expansion joints shall be made with ½-inch thick bituminous preformed expansion joint filler of a non-extruding type conforming to ASTM Designation D1751, for the full depth of the concrete and precut to the width of the sidewalk.

10.B.3 Joint Sealer. Joint sealer is generally not required unless shown on the plans.

10.B.4 Reinforcement. Reinforcement is only required for commercial driveway approaches unless otherwise shown on the plans.

10.B.5 Curing Compound. Curing compound shall conform to the requirements of ASTM Designation C309, Type 2.

Revised 7/1/2005 added detectable warning requirements and stone base under sidewalks and driveways. Also removed the curb and gutter section and reformed the entire chapter.

10.B.6 Detectable Warning Tiles. Detectable warning surfaces and their components shall be manufactured and /or supplied in a safety yellow color homogeneous throughout the tile and matching the pattern shown in standard drawing ST-12 with a slip resistance surface, such as that manufactured by "Armor-Tile" or its equivalent.

10.C. Construction Methods.

10.C.1 Removal. Existing sidewalks, sidewalk ramps or driveways shall be totally removed to the nearest contraction or isolation joint, unless otherwise specified by the Engineer. Any partial section removal shall be saw cut full depth. The curb and gutter section in front of a driveway (radius point to radius point) shall be saw cut full depth and removed before the driveway is constructed. Any curb and gutter broken or cracked outside the radius points during this removal and or reconstruction shall also be removed and replaced accordingly. Any damage to the existing street shall be the responsibility of the contractor.

10.C.2 Grading and Subgrade Preparation. All excavation or embankment required in the grading and subgrade preparation shall be unclassified and cleared in accordance with Chapter III - Earthwork.

10.C.2.1 Embankment material and placement shall be in accordance with Chapter III - Earthwork.

10.C.2.2 Subgrade. The top 6 inches of the subgrade shall be compacted to obtain a density of 95 percent of maximum before a minimum of 4 inches of compacted Type I aggregate base is placed.

Revised 7/1/2005 added detectable warning requirements and stone base under sidewalks and driveways. Also removed the curb and gutter section and reformed the entire chapter.

10.C.3 Forms. All forms shall be in good condition, clean, and free from imperfections. Each form shall not vary more than ¼ inch in horizontal or vertical alignment for each 10 feet in length.

10.C.3.1 Material and Size. Forms shall be made of metal unless otherwise approved by the Engineer and shall have a height equal to or greater than the depth of the sidewalk or driveway being constructed.

10.C.3.2 Strength. Forms shall be of such cross-section and strength, and so secured as to resist the pressure of the concrete when struck off, vibrated, and finished, and the impact and vibration of any equipment, which they may support.

10.C.3.3 Installation. The forms shall be set true to line and grade, supported through their length and joined neatly in such a manner that the joints are free from movement in any direction.

10.C.3.4 Preparation. Forms shall be cleaned and lubricated prior to each use and shall be so designed to permit their removal without damage to the new concrete.

10.C.4 Slip-form Machine. A slip-form machine may be used in lieu of forms. The machine must be equipped with mechanical internal vibrators and be capable of placing concrete to the correct cross section, line and grade within the allowable tolerances.

10.C.5 Joints. Unless directed by the Engineer the joints shall be formed at right angles to the alignment of the sidewalk and driveway

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and to the configuration specified by the plans or standard drawings.

10.C.5.1 Sidewalk Joint Patterns. Sidewalk surfaces shall be marked using a grooving tool to form the control joint; the groove shall not be wider than ¼ inch and edged with a 1/8-inch radius with a transverse joint spaced at a distance equal to the width of the sidewalk. Longitudinal joints spaced not less than 30 inches not more than 60 inches with transverse joints spaced to form a square pattern shall divide sidewalks greater than 6 feet in width. Edger tool marks shall remain showing unless the sidewalk is slip-formed and subsequently sawed. Curb joints should align with sidewalk joints where they abut.

10.C.5.2 Driveway Joint Patterns. In general, no driveway slab dimension shall exceed 10 feet without a joint, although widths no more than 24 times the slab thickness will be permitted to match existing joint patterns.

10.C.5.3 Expansion Joints. Expansion joints shall be placed where directed by the plans or Engineer. The preformed isolation joint material shall be left ½ inch below the surface to allow for the application of joint sealer in accordance with Chapter IX - Portland Cement Concrete Pavement. The isolation joints shall be secured in a manner so depositing and consolidating the concrete will not disturb them and rounded

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with an edging tool of ¼ inch radius.

10.C.5.4 Control Joints. Joints are to be constructed such that they shall extend to ¼ the depth of the sidewalk. If a grooving tool is used to form the control joint, the groove shall not be wider than ¼-inch and edged with a 1/8-inch radius. If the control joints are sawed, the groove shall not be less than 1/8-inch wide. Joint sealer is not required.

10.C.6 Concrete Work. Deposit and consolidate concrete as close to the final position as possible, beginning at one corner of the forms. Perform necessary hand spreading with shovels or come-along, not with rakes or vibrators. Do not walk in the fresh concrete with boots or shoes coated with earth or foreign substances. When concrete is placed on a sloped surface, begin concrete placement at the lowest area.

10.C.6.1 Finishing. Strike off the concrete with a vibratory or a hand strike-off method when adequate consolidation is attained. Immediately after strike-off, the concrete may be bullfoated to remove any high or low spots. Minimize the use of the bullfoat. Do not finish concrete with water standing on the surface. All edges of the slab shall be carefully finished with a ¼ inch radius edger. After finishing the surface of the concrete shall be broomed perpendicular to the traffic flow with a fine clean broom to provide an antiskid surface, and the edges and joints retooled. In all cases

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the finished sidewalk and driveway shall have a true surface, free from sags, twists, or warps, and shall have a uniform color and appearance.

10.C.6.2 Curing. As soon as practical after the concrete is finished it shall be cured with one of the acceptable liquid curing membranes applied according to manufactures directions. If forms are removed within a period of 72 hours of placement those formed surfaces shall also be cured. Wet burlap, cotton mats, waterproof paper, polyethylene sheeting or earth backfill shall not be acceptable as curing methods.

10.C.6.3 Protection. The Contractor shall protect the concrete work against damage or defacement of any kind until the City has accepted it. Concrete, which is damaged or defaced, shall be removed and replaced or repaired to the satisfaction of the Engineer, at the expense of the Contractor.

10.C.7 Backfill. A minimum of 24 hours shall elapse before forms are removed and 5 days shall elapse or the concrete must have attained 75% of its 28-day compressive strength before pavement is backfilled unless otherwise approved by the Engineer. The Contractor shall be responsible for the removal of excess dirt, rock, broken concrete, splatters and overspray from the construction area within 10 days unless otherwise directed by the Engineer. The Contractor shall also be responsible for the repair of any street pavement disturbed by the construction.

Revised 7/1/2005 added detectable warning requirements and stone base under sidewalks and driveways. Also removed the curb and gutter section and reformed the entire chapter.

10.C.8 Surface Tolerances. Sidewalks and driveways shall have a surface tolerance of ¼ inch in 10 feet when checked with a 10-foot straightedge. Vertical deflections at sidewalk joints shall not exceed ¼ inch.

10.C.9 Detectable Warning Surfaces. Detectable warning surfaces consisting of truncated domes aligned in a square grid pattern shall be provided where a curb ramp or landing connects to a crosswalk.

10.C.9.1 Location. The detectable warning surfaces shall be located so that the nearest edge is 6 inches minimum to 8 inches maximum from the back of the curb line and shall extend a minimum of 24 inches in the direction of travel and the full width of curb ramp.

10.C.9.2 Dome Size. Truncated domes shall have a diameter of 0.9 inch at the bottom, a diameter of 0.4 inch at the top, a height of 0.2 inch and a center-to-center spacing of 2.35 inches measured along diagonal of a square arrangement.

10.C.9.3 Visual Contrast. There shall be a minimum of 70 percent contrast in light reflectance between the detectable warning and the adjoining surface. The coloring shall be "safety yellow" and homogeneous and made an integral part of the detectable warning surface.

10.D Method of Measurement.

10.D.1 Sidewalks. Sidewalks will be measured to the nearest tenth of a square foot.

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10.D.2 Sidewalk Ramps. Sidewalk ramps including the detectable warning and flare portion of the ramp will be measured to the nearest tenth of a square foot. The gutter portion of the ramp will not be included as ramp area but paid as part of the curb and gutter.

10.D.3 Driveways. Driveways will be measured to the nearest tenth of a square foot. The gutter portion of the driveway will not be included as driveway area but paid as part of the curb and gutter.

10.E Basis of Payment. Furnish all labor, material, and equipment to perform all operations in connection with construction or reconstruction of concrete sidewalks, sidewalk ramps, and driveways. All items in this section will be paid for by the contract unit bid price.

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CHAPTER X - SIDEWALKS, CURB AND GUTTER, AND DRIVEWAYS

10.A. SIDEWALKS

10.A1. General. Sidewalks are required in subdivisions on at least one side of residential streets and on both sides of collector and arterial streets. All new constructed walks shall meet the requirements of the current ADA accessibility guidelines published by the Architectural and Transportation Barriers Compliance Board (Access Board) *Americans with disabilities Act Accessibility Guidelines* (ADAAG), Washington, D.C., July 1998 or most current edition.

10.A2. Design. Sidewalks are to be constructed using a minimum of 4 inches of Portland cement concrete with a minimum 28-day compressive strength of 3,000-psi, with 6 +/- 1 percent of total air-content. The walks shall be constructed on 4 inches of Type I rolled stone base extended 6 inches beyond the edges. Sidewalk sections across residential drives shall be constructed with a 6-inch thickness, and across commercial drives using an 8-inch reinforced thickness. The additional thickness at driveways shall extend 18 inches into the adjacent sidewalk on both sides of the driveway.

10.A2.1. Sidewalk Plan. A plan must be prepared showing the sidewalk in plan, profile, location of ADA ramp, location of expansion joints, and typical cross section. This plan may be included as part of the street plan. For sidewalks to be constructed on unimproved streets, it is necessary to obtain sufficient field data to determine the probable future grade of the street curb and design the sidewalk accordingly. Additional right-of-way to accommodate the roadside drainage may have to be provided.

Revised 7/1/2005 added detectable warning surfaces and rolled stone base under sidewalks

10.A3. Location. The outside edge of the sidewalk shall be placed 1 foot inside the street right-of-way line.

10.A4. Width. Residential sidewalks shall be a minimum width of 4 feet.

10.A5. Sidewalk Cross-Section Grade. The maximum cross slope for sidewalks shall be 50:1 (2%). For sidewalks located across a driveway entrance, the driveway grade may need to be adjusted to meet this maximum. For commercial and other areas where a wide sidewalk creates grade problems for access drives, it should be noted that only the minimum sidewalk width of 4 feet must be constructed at a maximum 2 percent cross slope across the entrance. The remaining width of the sidewalk may be constructed at a grade closer to that of the drive. For commercial entrances, joint lines should delineate the portion of the sidewalk that crosses the driveway so it is clear where the sidewalk crosses the entrance.

10.A6. Longitudinal Grade. The grade of the sidewalk shall not exceed the grade established for the adjacent roadway. When the grade exceeds 5 percent the walk should be widened to 5 feet for a distance of 5 feet every 200 feet unless driveways or other areas can be used as a safe passing space.

10.A7. Parkway and Drainage. The parkway cross-sectional grade (the area between the sidewalk and the street) shall be a minimum of 2 percent.

10.A7.1 Drainage from properties adjacent to the sidewalk shall not drain across the surface of the sidewalk nor shall the grade of the sidewalk be constructed that water would pond on the surface of the walk.

10.A8. Obstructions. All obstructions are to be removed or relocated to provide a clear minimum horizontal width of 32 inches and a clear vertical height of 80 inches. In the case where the sidewalk must be shifted a 5:1 taper to and

away from the obstruction with a straight section adjacent to the obstruction should be followed.

10.A9. Retaining Walls. When the sidewalk construction requires the installation of retaining walls to maintain or support adjacent improvements, the detailed plans shall include the wall design. Unless otherwise approved by the City, all retaining walls should be located on private property.

10.A10. Joints. The sidewalk shall be constructed such that panels are formed using control joints that are cut such that the resulting panel lengths are not less than 4 feet nor greater than 6 feet. Edges of the slab shall be edged with an edging tool that has a ¼-inch radius.

10.A10.1 Expansion joints shall be placed between the sidewalk and all structures, such as light standards, traffic light standards, traffic poles, columns, on each side of driveways, intersecting walks, or other locations when against any substantial structure. Expansion joints should also be placed as close to each property line as reasonable and at intervals not greater than 100 feet. Expansion joints shall be constructed by installing ½-inch thick bituminous preformed material for the full depth of the concrete precut to the width of the sidewalk.

10.A10.2 Construction joints shall be installed at the end of each day's work and at other times when the process of depositing concrete is stopped for 30 minutes or more.

10.A11. Ramps. Curb ramps are to be installed at all intersections and at certain mid-block locations on all new or reconstruction projects.

10.A11.1 Running Slope. The running slope shall be 50:1 minimum and 12:1 maximum.

10.A11.2 Cross Slope. The cross slope shall be 50:1 maximum.

10.A11.3 Landing. A minimum landing of 48 inches by 48 inches shall be provided at the top of the curb. Running and cross slopes shall be a maximum of 50:1.

10.A11.4 Flares. Flared sides with a maximum slope of 10:1, measured along the curb line, shall be provided where a circulation path crosses the curb ramp.

10.A11.5 Surfaces. Storm sewer intakes, grates, access covers, or other appurtenances shall not be located on curb ramps, landings, and gutter areas within the pedestrian access routes. All ramps shall have a textured, non-skid surface.

10.A11.6 Grade Breaks. Grade breaks shall not be permitted on curb ramps, landings or gutter areas within the pedestrian access route. The grade break between the gutter area and street at the foot of a curb ramp shall not exceed 13 percent.

10.A11.7 Drainage. Drainage from properties adjacent to the sidewalk shall not drain across the surface of the sidewalk nor shall the grade of the landing or sidewalk be constructed that water would pond on the surface of the ramp.

10.A11.8 Islands. Any raised islands in crossings shall be cut through level with the street or have curb ramps at both sides and a level area at least 48 inches long between the curb ramps in the part of the island intersected by the crossings.

10.A12. Detectable Warning Surfaces. Detectable warning surfaces consisting of truncated domes aligned in a square grid pattern shall be provided where a curb ramp or landing connects to a crosswalk.

10.A12.1 Location. The detectable warning surfaces shall be located so that the nearest edge is 6 inches minimum to 8 inches maximum from the back of the curb line and shall extend a minimum of 24 inches in the direction of travel and the full width of curb ramp.

10.A12.2 Dome Size. Truncated domes shall have a diameter of 0.9 inch at the bottom, a diameter of 0.4 inch at the top, a height of 0.2 inch and a center-to-center spacing of 2.35 inches measured along diagonal of a square arrangement.

10.A12.3 Visual Contrast. There shall be a minimum of 70 percent contrast in light reflectance between the detectable warning and the adjoining surface. The coloring shall be "safety yellow" and homogeneous and made an integral part of the detectable warning surface.

10.A13. DESIGN CHECKLIST FOR SIDEWALKS.

_____ Sidewalks shown in plan and profile on at least one side of residential streets and on both sides of collector and arterial streets.

_____ Sufficient field data is shown for unimproved streets to determine probable future grade of street curb and sidewalks are designed accordingly.

_____ Typical cross sections are shown with plan and profile.

_____ Outside edge of sidewalk is placed 1 foot inside of right-of-way line.

Revised 7/1/2005 added detectable warning surfaces
and rolled stone base under sidewalks

_____ ½-inch expansion joints are indicated on the plans.

_____ Sidewalk minimum width - 48 inches minimum thickness of 4 inches (or 6 inches when sidewalk crosses a residential driveway or 8 inches reinforced when sidewalk crosses a commercial driveway or alleys) placed on 4 inches of compacted base stone extending 6" beyond the edges of the walk.

_____ Sidewalk cross slope not greater than 1:50 (2%).

_____ All ramp slopes are a maximum of 1:12.

_____ Maximum rise for any length of run is 30 inches.

_____ Level-landing areas provided at top and bottom of each run.

_____ Detectable warning system indicated on all ramp surfaces.

_____ Curb ramps provided wherever sidewalk crosses a curb.

_____ Minimum width of curb ramp is 48 inches.

_____ Accessible-crossing area indicated on any raised island crossing.

_____ Hand railing indicated where elevation change between sidewalk and adjacent grade is 30" or more.

_____ Drainage from properties adjacent to the sidewalk does not drain across the surface of the sidewalk and the grades of the sidewalk ramps do not allow areas of surface ponding.

10.B. CURB AND GUTTER

10.B.1 General. Curb and gutter are required on all public improvement street projects.

10.B.2 Design. Curb and gutter are to be constructed using Portland cement concrete with a minimum 28-day compressive strength of 3,000-psi, with 6 +/- 1 percent of total air-content. The curb and gutter shall be constructed on 4 inches of Type I rolled stone base extending a minimum of one foot behind the back of the curb section. The width of the curb and gutter is to be 2 feet 6 inches. The curb height is to be 6 inches, and the gutter cross slope is to be 2 inches in 2 feet. The thickness of the gutter shall be 6 inches for residential streets and 8 inches for collector streets. The street plan shall show the top of curb elevation in the profile. At driveway locations shown on the plans, the gutter profile is to be carried across the drive while the curb is depressed to match the driveway slope. If driveway locations are not shown on the plans, curbs cannot be depressed.

10.B.3 Expansion Joints. Bituminous preformed expansion joints, 1/2 inch thick and precut to the exact cross section of the curb and gutter shall be placed at all driveway and intersection radii and at intervals of not more than 200 feet.

10.B.4 DESIGN CHECKLIST FOR CURB AND GUTTER

_____ Curb and gutter is provided for on all improved streets.

_____ Street profile shows top of left and right curb elevations.

_____ Curb cross-section shows curb height and width 6-inches.

_____ Gutter thickness is shown as 6 inches for local residential streets.

Revised 7/1/2005 added detectable warning surfaces and rolled stone base under sidewalks

_____ Gutter thickness is shown as 8 inches for non-residential local streets and collector residential streets.

_____ Curb and gutter is constructed on 4 inches Type I rolled stone base extending a minimum of one foot behind the curb.

_____ Total curb and gutter width is shown as 2 feet 6 inches.

_____ Gutter cross slope is 1 inch/ft (except at ramp areas).

_____ ½ inch expansion joints indicated at all driveways and at intervals of not more than 200 feet.

10.C. DRIVEWAYS

10.C.1 General. Driveway approaches are located to serve the operation of automobiles and other vehicles from the street pavement to a garage, parking area, building entrance, structure, or other approved use located on the property.

10.C.2 Residential Design. Residential driveway approaches shall be constructed using Portland cement concrete with a minimum 28-day compressive strength of 3,000-psi, with 6 +/- 1 percent of total air-content 6 inches thick. All driveway pavements shall be constructed on 4 inches of Type I rolled stone base. When a driveway approach intersects an existing 4-inch thick sidewalk, the area of the sidewalk within the driveway area including both sides of the sidewalk transition sections to meet the drive elevation or 18 inches, whichever is greater, shall be removed and reconstructed with 6-inch thick concrete. The cross slope of the sidewalk area is not to exceed 1:50 (2%). The grade of the driveway approach from the gutter line shall rise on a constant grade to the front edge (street side) of the sidewalk area. The slope of the driveway approach shall be at least 1:50 and not to exceed 1:8.

10.C.3 Commercial Design. Commercial/non-residential driveway approaches shall be constructed using Portland cement concrete with a minimum 28-day compressive strength of 3,000-psi, with 6 +/- 1 percent of total air-content 8 inches thick. All driveway pavements shall be constructed on 4 inches of Type I rolled stone base. Reinforcement shall be either #4 rebar 18in O.C or the equivalent amount of steel fiber. When a driveway approach intersects an existing 4-inch thick sidewalk, the area of the sidewalk within the driveway area, including both sides of the sidewalk transition sections to meet the drive elevation or a minimum of 18 inches shall be removed and reconstructed with 8-inch reinforced concrete. The cross slope of the sidewalk area is not to exceed 1:50 (2%). The grade of the driveway approach from the gutter line shall rise on a constant grade to the front edge (street side) of the sidewalk area. The slope of the driveway approach shall be at least 1:50 and not to exceed grade shown in the following Table for various street classifications.

10.C.3.1 Table for determining the driveway grade for various street classifications.

Street Classification	Approach Grade	Maximum Grade Back of Sidewalk	Slope 10 feet of R/W
Major Arterial	2% to 4%	4%	-2% to 6%
Secondary Arterial	2% to 5%	5%	-3% to 7%
Collector	2% to 6%	6%	-4% to 8%
Non-Resident Local	2% to 8%	8%	-6% to 10%

10.C.4 Approach Location. No driveway approach shall be permitted which will interfere with any existing parking meters, signs, traffic control devices, plantings, cables, poles, guys, water mains, gas mains, or other public utilities. No part of any driveway approach may be located within 4 feet of

a drop inlet or other drainage structure or a pedestrian ramp.

10.C.4.1 No part of any driveway approach shall be located within 40 feet of a point on the right-of-way opposite the end of a raised median.

10.C.4.2 Joint driveway approaches shall be permitted only if there is a perpetual mutual access agreement approved by the City Attorney and filed of record in the Greene County Recorder's Office.

10.C.4.3 The width of residential driveway approaches shall not exceed 22 feet without permission from City Traffic Engineer and shall not be less than 12 feet for new construction, and not less than the existing approach for reconstruction.

10.C.4.4 All driveway approaches shall be located to provide the following minimum clearances: Nearest edge of the driveway to nearest right-of-way line of alleys, 10 feet; nearest edge of the driveway to property line, 5 feet; on corner lots, nearest edge of the driveway to nearest right-of-way line of an intersecting street, 20 feet, but in no case shall the driveway return extend closer than 15 feet to the intersection right-of-way line extended. Where sight distance triangles exist, the nearest edge of the driveway to nearest corner of triangle shall be at least 20 feet.

10.C.4.5 Edges of the driveway approach may be skewed so that the angle between the street right-of-way line and the edge of the driveway approach is not less than 60 degrees.

10.C.4.6 Radius of the driveway approach shall not, in any case, extend beyond the

projection of the adjacent property line, extended perpendicularly to the right-of-way line.

10.C.4.7 The maximum radius of a driveway return shall be the smaller of the distance between the edge of the roadway and the right-of-way line or 15 feet.

10.C.5 Expansion Joints. The plans shall show bituminous 1/2-inch thick preformed expansion joints to be placed at the right-of-way and sidewalk connections.

10.C.6 Existing Curb and Gutter. The plans shall show the existing curb and gutter section in front of a driveway (radius point to radius point) shall be saw cut full depth and removed before the driveway is constructed. The entire curb and gutter section would then be reconstructed the same concrete and depth as the driveway approach.

10.C.5 DESIGN CHECKLIST FOR DRIVEWAYS

_____ Driveway locations indicated on plans.

_____ Driveway approach is located 40 feet beyond the end of a raised median.

_____ Driveway approaches do not interfere with any existing parking meters, signs, traffic control devices, plantings, cables, poles, guys, water mains, gas mains, or other public utilities.

_____ Copy of approved joint driveway approach agreement filed in the Greene County Recorder's Office.

_____ Width of driveway approach at right-of-way line is not less than 12 feet nor more than 22 feet.

_____ Approach not within 4 feet of a drop inlet or other drainage structure or pedestrian ramp.

_____ Approach grade of driveway does not exceed the maximum allowed per the street classification.

_____ Nearest right-of-way of alley - 10 feet.

_____ Nearest edge to property line - 5 feet.

_____ If corner lot, nearest edge to nearest right-of-way of intersecting street - 20 feet.

_____ Nearest corner of sight triangle - 20 feet.

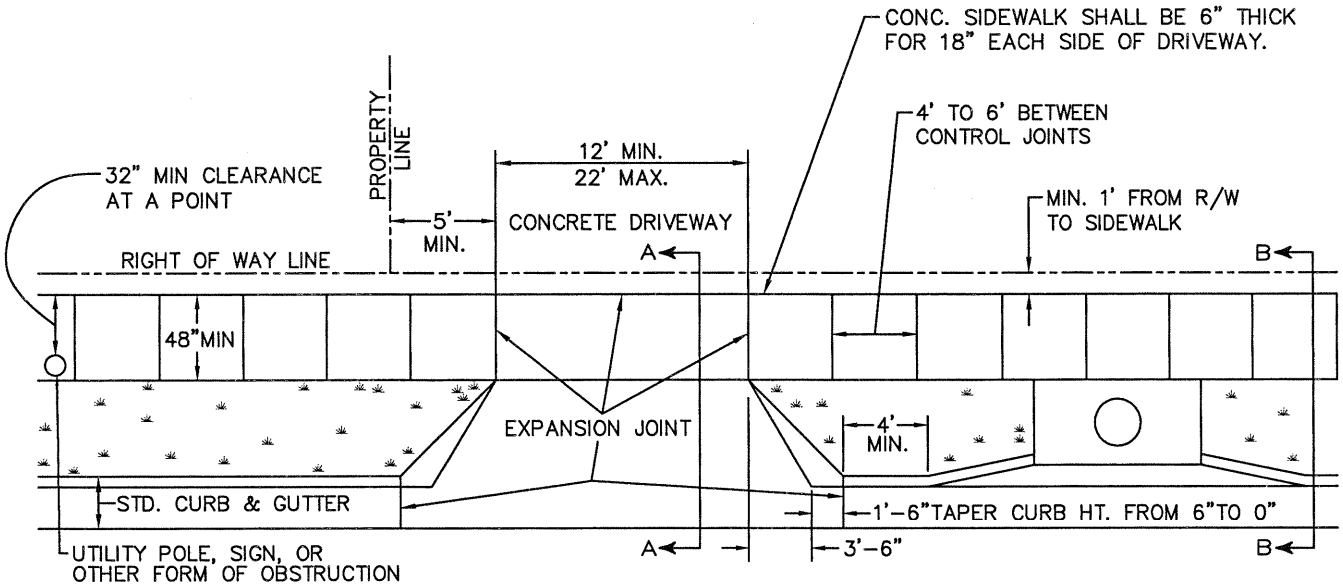
_____ Approach skewed to not less than 60 degrees between street right-of-way line and the edge of the driveway approach.

_____ Radius of driveway approach <u>not</u> extended beyond the projection of the adjacent property line.

_____ Radius of driveway return is designed for the classification of street and type of vehicle use.

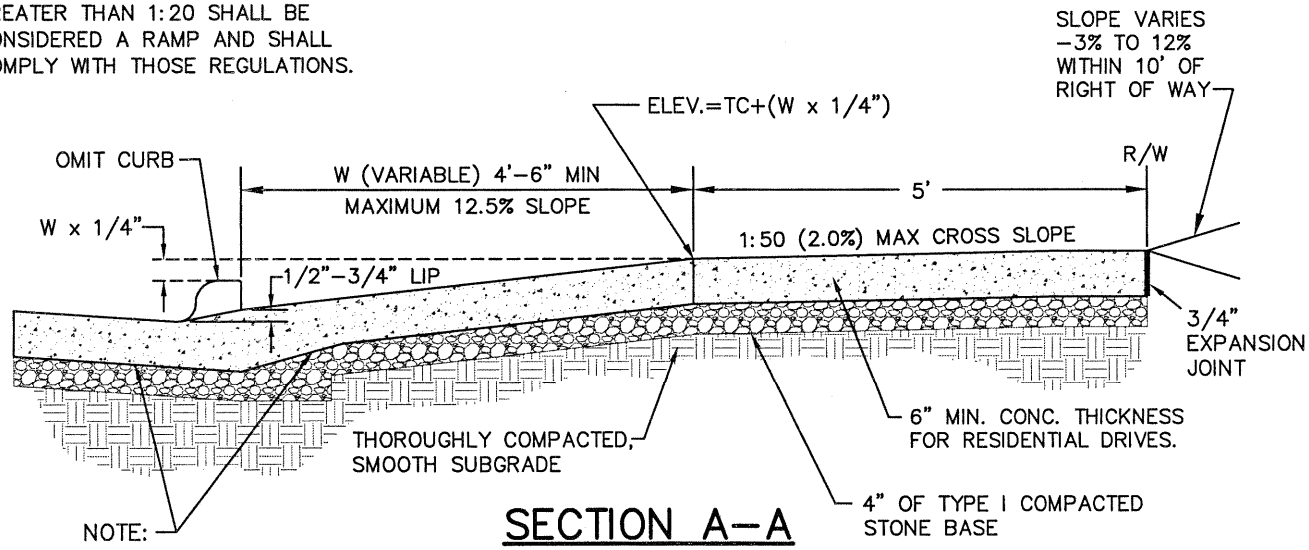
_____ Expansion joints indicated.

_____ Cross slope of sidewalk area within the driveway must not exceed 1:50 (2%).

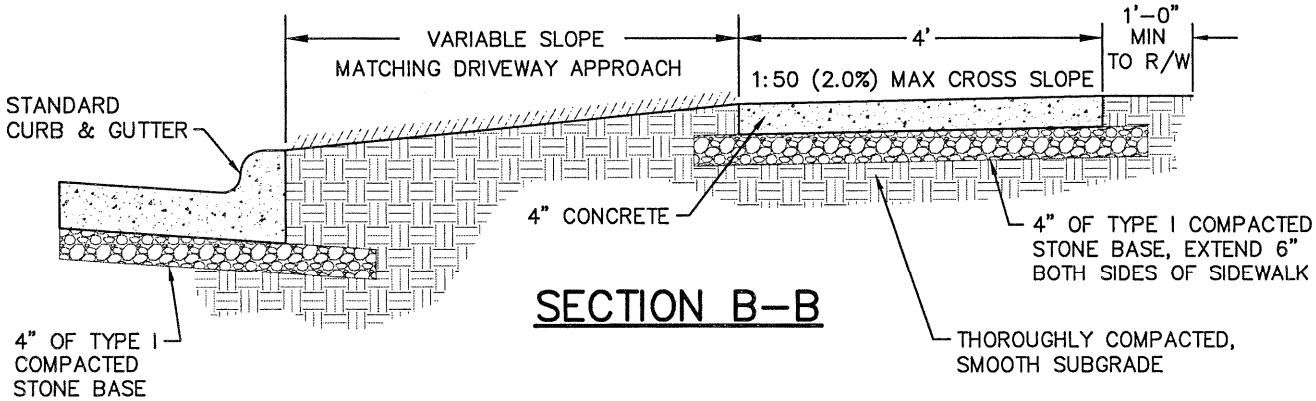


TYPICAL DRIVEWAY PLAN VIEW

NOTE:
ANY PART OF AN ACCESSIBLE ROUTE WITH A RUNNING SLOPE GREATER THAN 1:20 SHALL BE CONSIDERED A RAMP AND SHALL COMPLY WITH THOSE REGULATIONS.

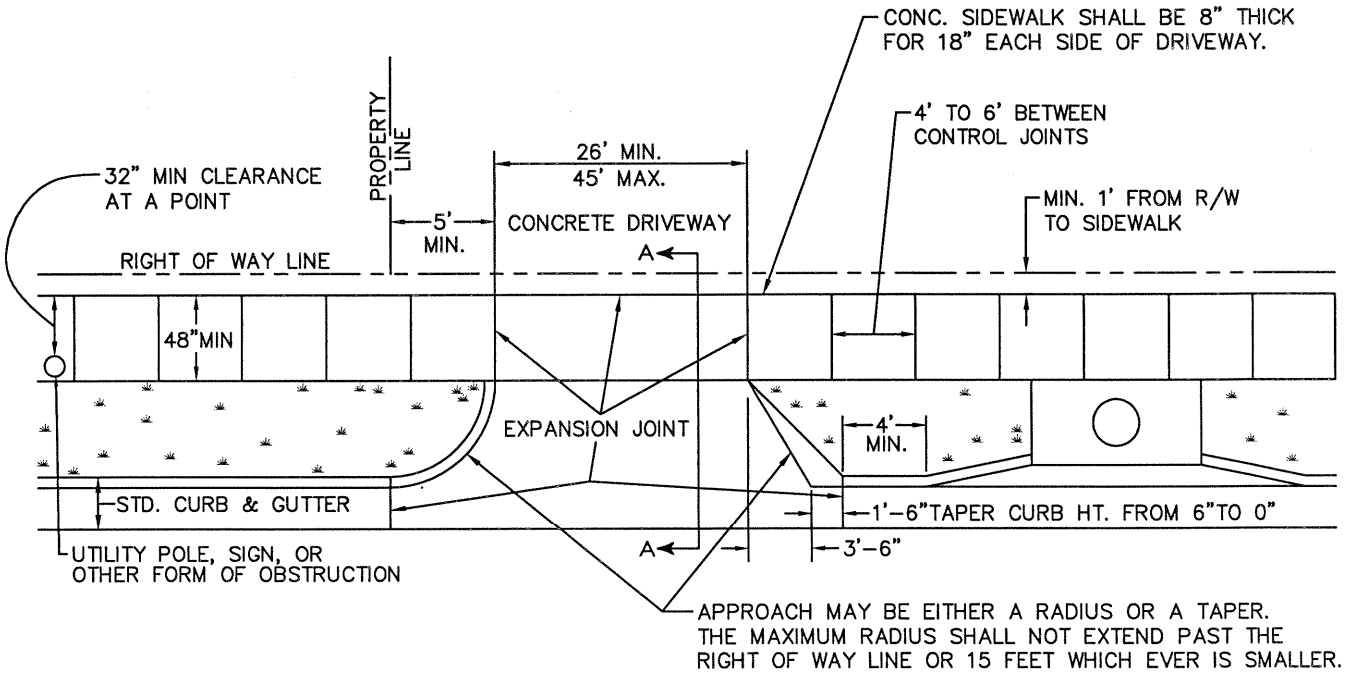


SECTION A–A



SECTION B–B

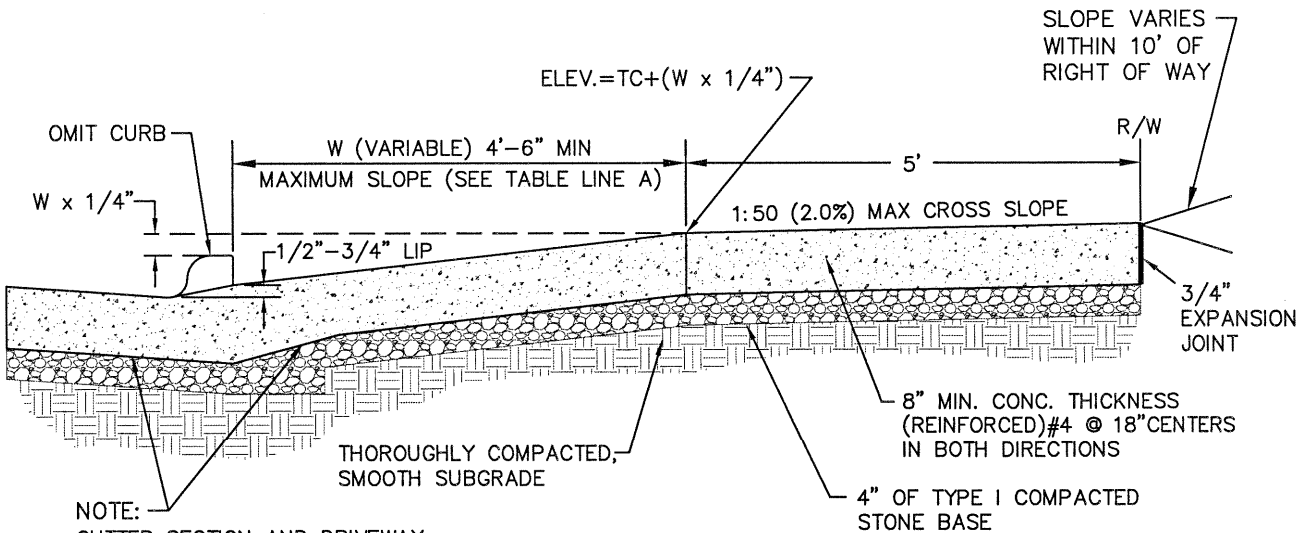
DEPARTMENT OF PUBLIC WORKS SPRINGFIELD, MO.	TYPICAL RESIDENTIAL DRIVEWAY & SIDEWALK	ADOPTED: 7-1-05
		ST-8



TYPICAL DRIVEWAY PLAN VIEW

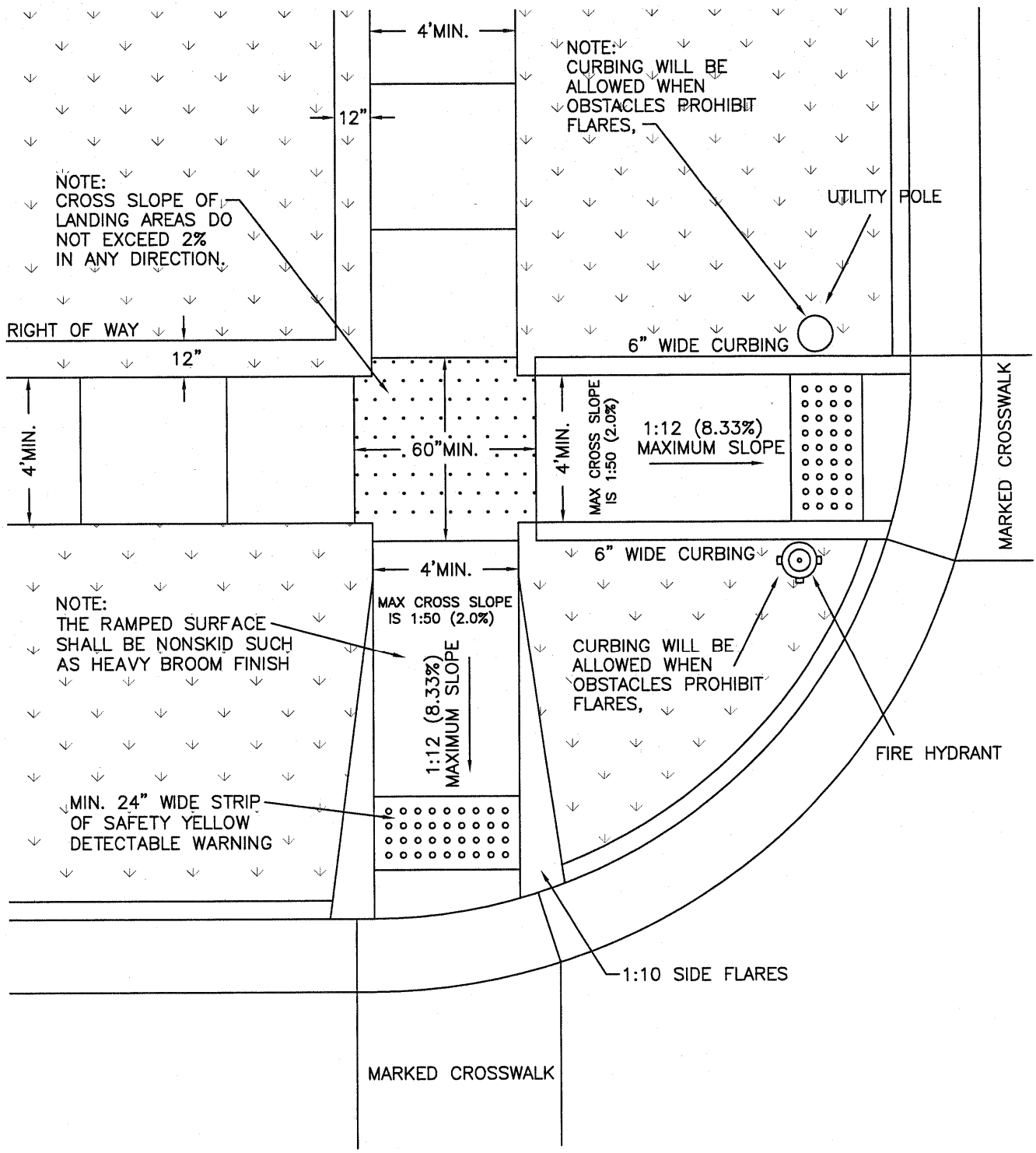
NOTE:
ANY PART OF AN ACCESSIBLE ROUTE WITH A RUNNING SLOPE GREATER THAN 1:20 SHALL BE CONSIDERED A RAMP AND SHALL COMPLY WITH THOSE REGULATIONS.

REQUIRED DRIVEWAY GRADES				
	MAJOR ARTERIAL	SECONDARY ARTERIAL	COLLECTOR	NON-RESIDENTIAL LOCAL
A. DRIVEWAY APPROACH GRADE	1/4in/ft to 1/2in/ft	1/4in/ft to 5/8in/ft	1/4in/ft to 3/4in/ft	1/4in/ft to 1in/ft
B. MAXIMUM CHANGE OF GRADE AT BACK OF SIDEWALK	4%	5%	6%	8%
C. SLOPE WITHIN 10 FEET OF RIGHT-OF-WAY LINE	-2% to 6% 1/4in/ft to 3/4in/ft	-3% to 7% -3/8in/ft to 7/8in/ft	-4% to 8% -1/2in/ft to 1in/ft	-6% to 10% -3/4in/ft to 1-1/4in/ft

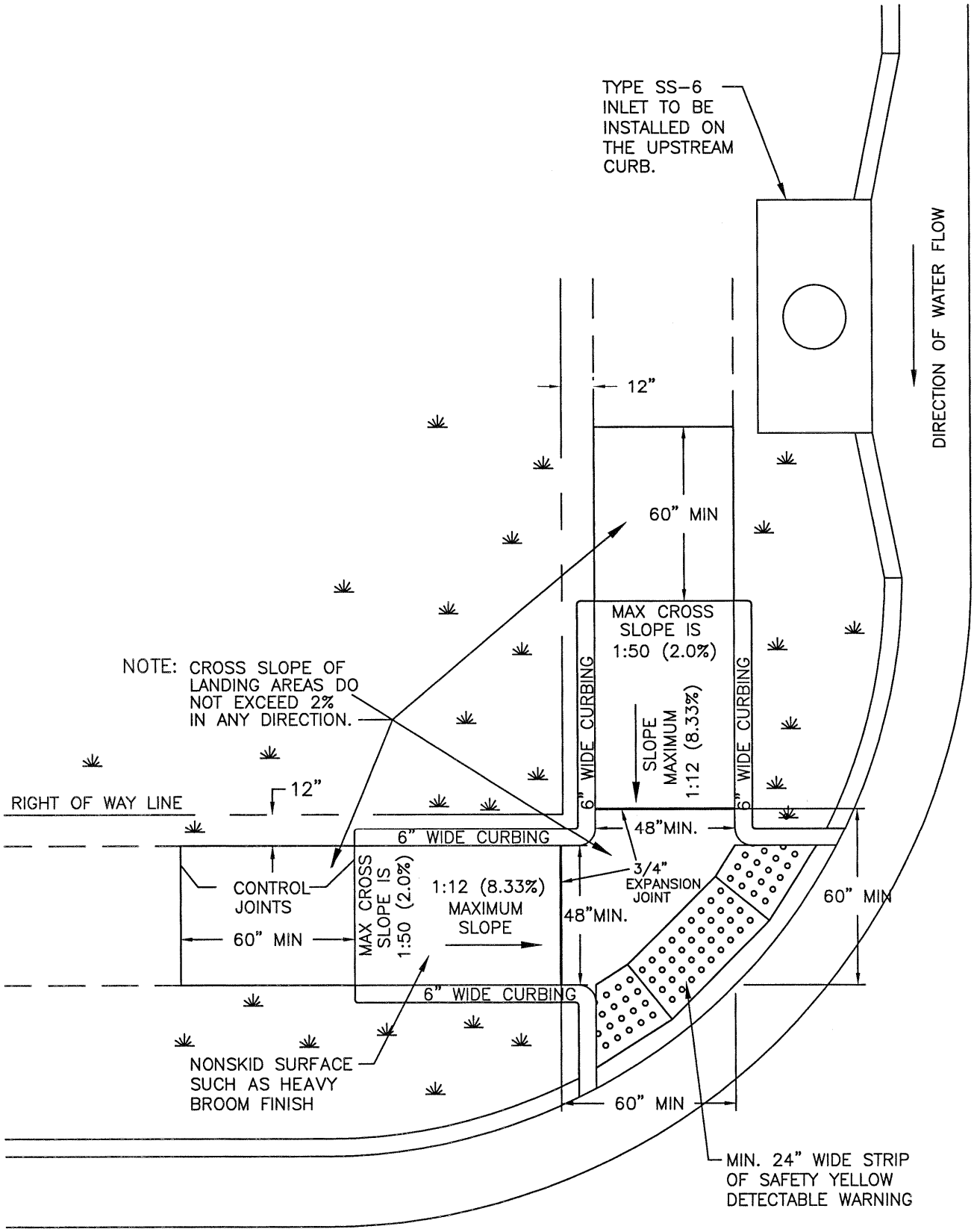


SECTION A-A

DEPARTMENT OF PUBLIC WORKS SPRINGFIELD, MO.	TYPICAL COMMERCIAL DRIVEWAY & SIDEWALK	ADOPTED: 7-1-05
		ST-9

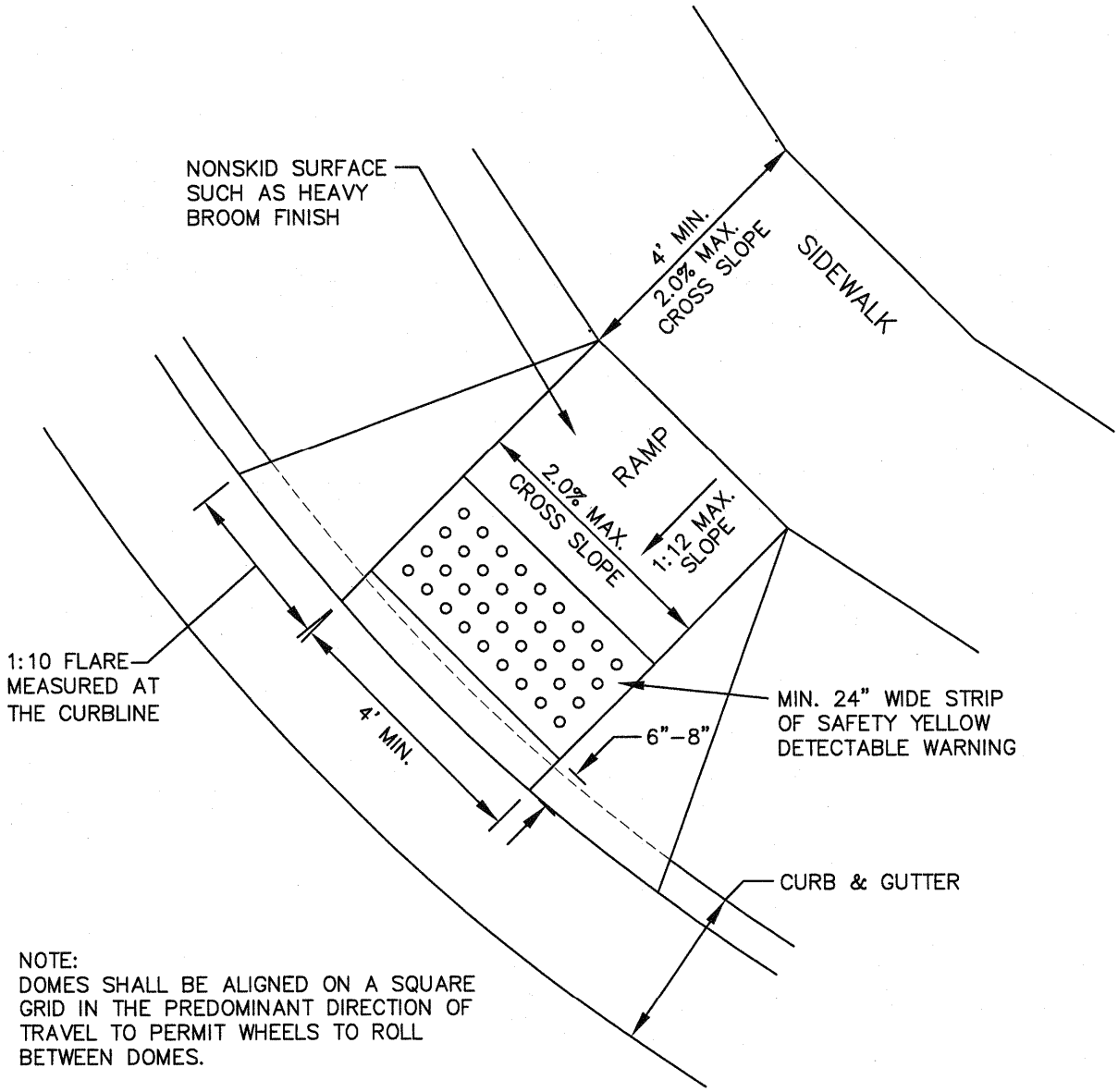


DEPARTMENT OF PUBLIC WORKS SPRINGFIELD, MO.	CURB RAMP TYPE I	ADOPTED: 7-1-05
		ST-10

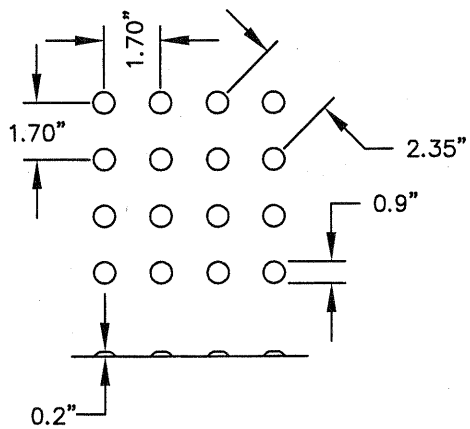


NOTE: USE CURB RAMP STYLE II WHEN DISTANCE FROM FACE OF CURB AND THE RIGHT OF WAY LINE IS LESS THAN AN ALLOWABLE DISTANCE TO INSTALL A CURB RAMP TYPE I WITH A 1:12 (8.33%) RUNNING SLOPE.

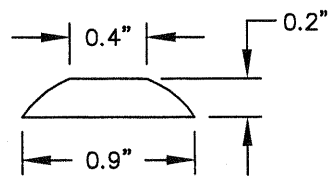
DEPARTMENT OF PUBLIC WORKS SPRINGFIELD, MO.	CURB RAMP TYPE II	ADOPTED: 7-1-05
		ST-11



NOTE:
DOMES SHALL BE ALIGNED ON A SQUARE GRID IN THE PREDOMINANT DIRECTION OF TRAVEL TO PERMIT WHEELS TO ROLL BETWEEN DOMES.



DOME SPACING



DOME SECTION

DEPARTMENT OF PUBLIC WORKS SPRINGFIELD, MO.	CURB RAMP WITH DETECTABLE WARNING	ADOPTED: 7-1-05
		ST-12